

1. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{6x^3 + 7x^2 - 7x - 6}{8x^2 + 2x - 15}$$

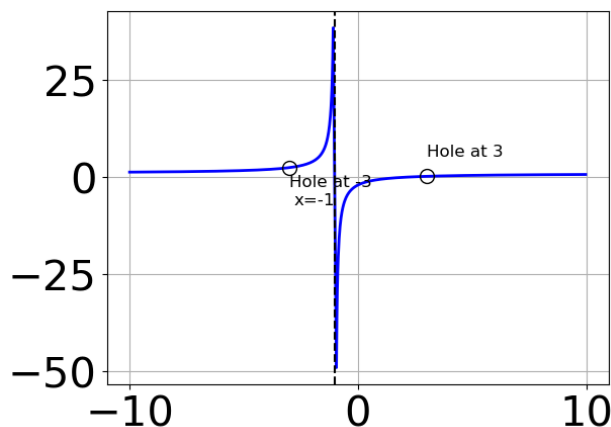
- A. Vertical Asymptote of $x = 0.75$ and hole at $x = -1.5$
 - B. Vertical Asymptotes of $x = 1.25$ and $x = -0.667$ with a hole at $x = -1.5$
 - C. Holes at $x = 1.25$ and $x = -1.5$ with no vertical asymptotes.
 - D. Vertical Asymptote of $x = 1.25$ and hole at $x = -1.5$
 - E. Vertical Asymptotes of $x = 1.25$ and $x = -1.5$ with no holes.
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2. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{9x^3 - 42x^2 + 16x + 32}{6x^2 + 7x - 20}$$

- A. Vertical Asymptote of $x = -2.5$ and hole at $x = 1.333$
 - B. Vertical Asymptotes of $x = -2.5$ and $x = -0.667$ with a hole at $x = 1.333$
 - C. Vertical Asymptote of $x = 1.5$ and hole at $x = 1.333$
 - D. Vertical Asymptotes of $x = -2.5$ and $x = 1.333$ with no holes.
 - E. Holes at $x = -2.5$ and $x = 1.333$ with no vertical asymptotes.
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3. Which of the following functions *could* be the graph below?



- A. $f(x) = \frac{x^3 - 10.0x^2 + 28.0x - 24.0}{x^3 + x^2 - 9.0x - 9.0}$
- B. $f(x) = \frac{x^3 - 2.0x^2 - 9.0x + 18.0}{x^3 + x^2 - 9.0x - 9.0}$
- C. $f(x) = \frac{x^3 + 2.0x^2 - 25.0x - 50.0}{x^3 - 1.0x^2 - 9.0x + 9.0}$
- D. $f(x) = \frac{x^3 + 2.0x^2 - 9.0x - 18.0}{x^3 - 1.0x^2 - 9.0x + 9.0}$
- E. None of the above are possible equations for the graph.

4. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{12x^3 - 23x^2 - 22x + 40}{4x^2 + 3x - 10}$$

- A. Horizontal Asymptote of $y = 3.0$
- B. Horizontal Asymptote of $y = -2.0$ and Oblique Asymptote of $y = 3x - 8$
- C. Horizontal Asymptote at $y = -2.0$
- D. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 3x - 8$
- E. Oblique Asymptote of $y = 3x - 8$.

5. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{8x^3 + 10x^2 - 57x - 45}{4x^2 - 17x - 15}$$

- A. Horizontal Asymptote of $y = 2.0$ and Oblique Asymptote of $y = 2x + 11$
 - B. Horizontal Asymptote of $y = 5.0$ and Oblique Asymptote of $y = 2x + 11$
 - C. Horizontal Asymptote at $y = 5.0$
 - D. Oblique Asymptote of $y = 2x + 11$.
 - E. Horizontal Asymptote of $y = 2.0$
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6. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{15x^3 + 19x^2 - 4}{9x^3 - 14x - 8}$$

- A. Horizontal Asymptote of $y = 1.667$
 - B. Vertical Asymptote of $y = 1.333$
 - C. Horizontal Asymptote of $y = 0$
 - D. Vertical Asymptote of $y = -1$
 - E. None of the above
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7. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{12x^3 - 7x^2 - 30x + 25}{9x^2 + 27x + 20}$$

- A. Vertical Asymptotes of $x = -1.333$ and $x = -1.667$ with no holes.
- B. Vertical Asymptote of $x = 1.333$ and hole at $x = -1.667$
- C. Vertical Asymptote of $x = -1.333$ and hole at $x = -1.667$

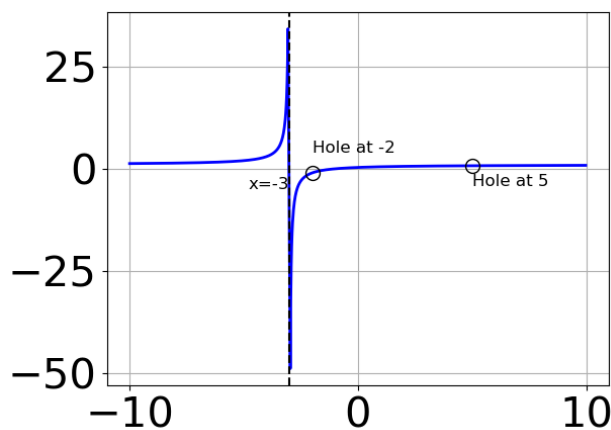
- D. Vertical Asymptotes of $x = -1.333$ and $x = 1.25$ with a hole at $x = -1.667$
- E. Holes at $x = -1.333$ and $x = -1.667$ with no vertical asymptotes.

8. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{2x^2 - x - 10}{4x^3 - 12x^2 - 25x + 75}$$

- A. Horizontal Asymptote of $y = 0.500$ and Oblique Asymptote of $y = 2x - 5$
- B. Horizontal Asymptote at $y = -2.000$
- C. Horizontal Asymptote of $y = 0$
- D. Oblique Asymptote of $y = 2x - 5$.
- E. Horizontal Asymptote of $y = 0.500$

9. Which of the following functions *could* be the graph below?



- A. $f(x) = \frac{x^3 + 4.0x^2 - 25.0x - 28.0}{x^3 - 19.0x - 30.0}$
- B. $f(x) = \frac{x^3 + 2.0x^2 - 13.0x + 10.0}{x^3 - 19.0x + 30.0}$
- C. $f(x) = \frac{x^3 - 2.0x^2 - 11.0x + 12.0}{x^3 - 19.0x + 30.0}$

D. $f(x) = \frac{x^3 - 2.0x^2 - 13.0x - 10.0}{x^3 - 19.0x - 30.0}$

E. None of the above are possible equations for the graph.

10. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{6x^3 - 29x^2 + 43x - 20}{8x^2 - 26x + 15}$$

- A. Vertical Asymptote of $x = 0.75$ and hole at $x = 2.5$
B. Vertical Asymptotes of $x = 0.75$ and $x = 2.5$ with no holes.
C. Vertical Asymptotes of $x = 0.75$ and $x = 1.333$ with a hole at $x = 2.5$
D. Holes at $x = 0.75$ and $x = 2.5$ with no vertical asymptotes.
E. Vertical Asymptote of $x = 0.75$ and hole at $x = 2.5$
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